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# With or Against the People? The Impact of a Bottom-Up Approach on Tax Morale and the Shadow Economy

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### Abstract:

Policymakers often propose strict enforcement strategies to fight the shadow economy and to increase tax morale. However, there is also a bottom-up approach: decentralizing the political power to those who are close to the problems and give them a direct political say. This paper analyses the impact of direct democracy and local autonomy on tax morale and the size of the shadow economy. We use two different data sets on tax morale at the individual level (World Values Survey and International Social Survey Programme), and macro data of the size of the shadow economy to systematically analyse the effects of institutions in Switzerland, a country where participation rights and the degree of federalism vary across different cantons. The findings suggest that direct democratic rights and local autonomy, have a significantly positive effect on tax morale and the size of the shadow economy.

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## 1. Introduction

Why do people pay taxes? This question has attracted increased attention in the tax compliance literature over the last few years. It can be supposed that nobody likes to pay taxes. One possibility is to “enforce” people to pay their taxes establishing a deterrence policy. In line with the economic-of-crime approach based on the expected utility maximisation calculus, Allingham and Sandmo (1972) presented a formal model with the insight that the extent of tax evasion is negatively correlated with the probability of detection and the degree of punishment. However, this pathbreaking model has been criticised by many authors (see, e.g., Graetz and Wilde, 1985; Alm, McClelland and Schulze, 1992; Frey and Feld, 2002). A main point, which is connected to the empirical and experimental findings, is that these deterrence models predict too little tax evasion. In many countries the level of deterrence is too low to explain the high degree of tax compliance. Furthermore, there is a big gap between the amount of risk aversion that is required to guarantee such a compliance and the effectively reported degree of risk aversion. For the United States, the estimated Arrow-Pratt measure of risk aversion is between one and two, but only a value of 30 would explain the observed compliance rate (see Graetz and Wilde, 1985, Alm, McClelland and Schulze, 1992). Similarly, in Switzerland the relative risk aversion varies between 1 and 2, but a value of 30.75 would be necessary to reach the observed level of tax compliance of 76.52 percent (see Frey and Feld, 2002). Furthermore, tax compliance experiments mostly report a higher level of income declaration than the expected utility model would predict (for a survey see Torgler, 2002).

To resolve this puzzle of tax compliance, many researchers have argued that tax morale<sup>1</sup> can help explaining the high degree of tax compliance (for empirical and experimental papers see, e.g., Schwartz and Orleans, 1967; Lewis, 1982; Roth, Scholz and Witte, 1989; Alm, McClelland and Schulze, 1992, 1999; Pommerehne, Hart and Frey, 1994; Frey, 1997, 2003; Frey and Feld, 2002; Feld and Tyran, 2002; for a survey see Torgler, 2001). Erard and Feinstein (1994) in their theoretical paper stress the relevance of integrating moral sentiments into the models to provide a reasonable explanation of actual compliance behaviour. Moreover, Andreoni, Erard and Feinstein (1998) point out in their tax compliance survey that “adding moral and social dynamics to models of tax compliance is as yet a largely undeveloped area of research” (p. 852). Many researchers stress that a considerable portion of taxpayers are always honest. Some taxpayers are “simply predisposed not to evade” (Long and Swinger, 1991, p. 130) and thus do not even search for ways to cheat at taxes (see Frey, 1999). More and more papers go beyond treating tax morale as a black box, a residuum, analysing which factors shape or maintain tax morale (for an overview see Torgler 2007). Also, there is an increased attention by policymakers to understand the driving forces of tax morale and the possibilities to influence the willingness to pay taxes. In the first part of the paper, we investigate the effect of decentralizing the political competencies to those who are close to the problems and by giving them the final say. That

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<sup>1</sup> First important findings in the tax morale literature date from the 60s and 70s by German scholars around Günter Schmolders (1951/1952, 1960, 1962, 1970) known as the ‘Cologne school of tax psychology’. They have emphasised that economic phenomena should not only be analysed from the traditional point of view. They saw tax morale as an attitude regarding tax (non-) compliance (see, e.g., Schmolders, 1960).

means we evaluate whether direct political voter participation and local autonomy have an impact on tax morale.

The second part of the paper explores the same question but using the size of the shadow economy instead of tax morale as dependent variable. A relevant issue is whether influences obtained on tax morale are also reflected in real, or observed, behaviors. Thus, it may be interesting to complement an approach at the attitudinal level with a more output oriented variable, namely the shadow economy. Moreover, Alm, Martinez-Vazquez, and Schneider (2004) argue that the size of the underground economy can serve as a useful, if somewhat imperfect, measure of the extent of tax evasion. Thus, in the second part of the paper we will investigate to which extent direct democracy and local autonomy affect the size of the shadow economy. In the last two decades the number of studies investigating the underground economy has strongly increased. Generating statistics and empirical results are insofar important as it allows having effective and efficient resource allocation decisions. A similar tendency is observable in other areas that investigate illegal activities (Schneider and Enste, 2000; 2002 and Schneider, 2005a). Although there are more and more studies that investigate the causes of shadow economic activities, societies often attempt to control these activities through measures such as punishment, prosecution, economic growth or education (Schneider and Enste, 2002). However, there are further instruments that merit more attention. In this aspect, it is highly relevant to investigate other variables such as direct democracy or local autonomy. Thus, it can be supposed that the extent of tax morale and the shadow economy depend on the type of constitution. It is essential to analyze under which institutional conditions it is

more likely that citizens pay their taxes. For this, the study investigates first of all a cross-section of individuals throughout Switzerland using the World Values Survey (WVS) data 1995-1997 and the International Social Survey Programme (ISSP) data set "Religion II" and complemented it with a macro approach at the cantonal level using a panel with values for the years 1990, 1995, and 2000. The Swiss WVS survey has been conducted in 1996 and the ISSP survey in 1999. Both data sets allow us to control for many factors that are unrelated to institutional variables. Switzerland is chosen because it allows observing the influence of institutional factors because cantons have different degrees of political participation possibilities and fiscal decentralization.

In Section 2 theoretical considerations are presented focusing on direct democracy and local autonomy. Section 3 and 4 present the empirical findings and Section 5 finishes with some concluding remarks.

## **2. Theoretical considerations**

### *2.1. Political participation*

Tax morale and the shadow economy might depend on the type of institutional settings. Institutions that respect the preferences of the citizens will have more support by the people than a state that acts as a Leviathan (see Prinz, 2002). Levi (1988) points out that a possibility to create or maintain compliance is to provide reassurance by the government. A government that precommits itself with direct democratic rules imposes itself restraints on its own power and thus sends a signal that taxpayers are seen as responsible persons. Furthermore, direct democratic rules signalise that citizens are not ignorant or uncomprehending voters, which might create or maintain a certain social capital stock. The government signalises thus that taxpayers' preferences are

taken into account in the political process. Estimating a cross section/time series multiple regressions using Swiss data, Pommerehne and Weck-Hannemann (1996) found that in cantons with a high degree of direct political control tax evasion is – ceteris paribus – about SFr 1500 lower as compared to the average of the cantons without such direct influence. Feld and Frey (2002b) analysed how tax authorities treat taxpayers in Switzerland and found that tax authorities of cantons with more direct participation rights, compared to cantons with less direct democracy, treat taxpayers more respectfully and are less suspicious if taxpayers report too low incomes. On the other hand, not submitted tax declarations are more heavily fined. Looking at the experimental evidence, Alm, McClelland and Schulze (1999), Feld and Tyran (2002), Torgler and Schaltegger (2005), and Torgler, Schaltegger and Schaffner (2003) found that voting on tax issues has a positive effect on tax compliance. The more taxpayers can participate in political decision making by popular rights, the more the tax contract is based on trust and the higher is tax morale.

Taxpayers are treated as “citizens” with extensive rights *and* obligations (Frey, 2003). They are in the position to better monitor and control politicians via referenda. Furthermore, they can set rules via initiative and are thus able to renegotiate the tax contract with the government influencing, e.g., the tax laws and the tax rates, which enhances civic virtue. Thus, the possibility for taxpayers to vote on fiscal issues positively influences tax morale. Being involved in the political decision process enhances taxpayers’ sense of civic duty (Feld and Frey, 2002a) and thus affects tax morale and the size of the shadow economy. The instrument of direct democracy helps spend taxes according to their preferences, the motivation to contribute paying their taxes

and remain in the official sector increases. Rules attained through an active involvement of people enhance rule obedience and the willingness to cooperate and to act in line with the decided rules. A lack of participation may lead to lower level of satisfaction with the system and a feeling of powerlessness, which may lower tax compliance (Alm, Jackson and McKee 1993). The more people are involved in establishing rules, the stronger is their sense of obligation (Kidder and McEwen, 1989; Cialdini, 1989; McEwen and Maiman, 1986; Lempert, 1972). Tyler's research (1990a, 1990b, 1997) also provides support for the importance of legitimacy and allegiance to authority in compliance decisions. Alm, Jackson and McKee (1993) analyze the effects of fiscal institutions on compliance by varying the process by which tax collection becomes a public good (voting versus imposition). Donations given to a campus organization were taken as public good. So, the public good was not distributed directly to the subjects, but sent to a specific organization. The experimental results provide evidence that tax compliance is higher when individuals can vote on the use of their taxes than when there is no voting over alternatives. Individuals are more likely to comply with their taxes when they are able to select themselves the public sector expenditure program. On the other hand tax compliance is lower when subjects cannot control the use of their tax payments. Thus, the way people are treated by the authorities affects their evaluation of these authorities and their willingness to co-operate (see, e.g., Tyler, Casper and Fisher, 1989). Tyler (1997) argues that understanding what people want in a legal procedure helps to explain public dissatisfaction with the law and points towards directions for building public support for the law in the future.

*Thus, the following hypothesis can be developed:*

*Hypothesis 1: The more extensive the citizens' direct political participation possibilities, the higher ceteris paribus the tax morale and the lower the size of the shadow economy.*

## *2. Decentralisation*

A second institution is federalism. Small structures have the advantage that citizens' preferences can be met better. There is an intensive every-day interaction between taxpayers and local politicians and bureaucrats. This closeness between taxpayers, the tax administration and the local government may induce trust and thus enhance tax morale. Politicians and members of the administration are better informed about the preferences of the local population. Furthermore, if politicians are elected at the local level, they have an incentive to put citizens' preferences into account (see Frey and Eichenberger, 1999) and thus to spend the tax revenues according to their preferences. Decentralisation brings the government closer to the people. Many economists point out the relevance of giving sub-national governments the taxing power (see, e.g., Bahl, 1999). The strength of decentralised systems is a better transparency of this input-output relationship. The tax system must be visible to the local taxpayers. The income tax is a good instrument for a local structure. It is easy to administrate and always under individuals' test, who have the opportunity to use the instruments of exit and voice (see Hirschman, 1970). The mechanism of entry and exit in federal states provides a strong incentive to produce public services in accordance to



taxpayers' preferences. Moreover federalism and local autonomy is combined with innovation. Federalism serves as a laboratory for policy inventions (Oates 1999). In the words of U.S. Supreme Court Justice, Louis Brandeis in 1932: "It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country" (Oates, 1999, p. 1132). Feld and Schnellenbach (2004) have analysed different policy fields at the Swiss local level, where this kind of laboratory federalism in fact worked as a breeding ground for innovations. If voters can compare the performance of their government with the performance of neighbouring governments with similar conditions, there is also some kind of yardstick competition.<sup>2</sup>

Thus, the second hypothesis states:

*Hypothesis 2: The more extensive the local autonomy, the higher ceteris paribus tax morale and the lower the size of the shadow economy<sup>3</sup>.*

### **3. Empirical results on tax morale**

#### *3.1. Model*

In order to examine our hypotheses derived in section 2, the following estimation equation is postulated for tax morale:

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<sup>2</sup> The seminal contribution on yardstick competition stems from Besley and Case (1995).

<sup>3</sup> However, it should be noticed that in Switzerland local authorities administer the largest part of income taxpayers. The cantonal level, which is the focus in this paper, copes only a smaller share of taxpayers directly.

$$TM_i = \beta_0 + \beta_1 \cdot p_c + \beta_2 \cdot f_c + \beta_3 \cdot t_i + \beta_4 \cdot y_i + \beta_5 \cdot CTL_i + \beta_6 \cdot TR_i + \beta_7 \cdot INST_c + \varepsilon_i$$

where  $TM_i$  denotes the individual degree of tax morale. The general question to assess the level of tax morale from the World Values Survey in Switzerland for the year 1996 is:

Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: (...) Cheating on tax if you have the chance (% “never justified” – code 1 from a ten-point scale where 1=never and 10=always).

The dependent variable TAX MORALE<sup>4</sup> is developed by recoding the ten-point scale into a four-point scale, with the value 4 standing for “never justifiable”. The value one is an aggregation of the last 7 points, which were rarely chosen.

Similarly, the question in the ISSP (year 1999) was:

Do you feel it is wrong or not wrong if a taxpayer does not report all of his or her income in order to pay fewer income taxes? (1 = not wrong, 2 = a bit wrong, 3 = wrong, 4 = seriously wrong).

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<sup>4</sup> The way tax morale is defined here can be criticised as only one question is used to assess tax morale. On the other hand, such a definition reduces the problems which are connected to an index.

Thus, in both data sets we have the same tax morale scale. The independent variables are specified as follows:

1.  $p_c$ : As an approximation for the probability of detection, the number of tax auditors per taxpayer (in ‰) in each canton  $c$  is used.
2.  $f_c$ : The penalty tax rate is approximated by the standard legal fine as a multiple of the evaded tax amount (in percent) in a canton  $c$ <sup>5</sup>.
3.  $t_i$ : Individual tax rate.
4.  $y_i$ : The individual income class of a taxpayer (see *Appendix Table A1 and A2*)
5.  $CTL_i$ : a panel of control variables at the individual level covering: age, gender, education, marital status, employment status.
6.  $TR_i$  : measures in the WVS data set the trust in the government<sup>6</sup> and in the ISSP data set the confidence in the courts and the legal system<sup>7</sup>.
7.  $INST_c$ : Institutional factors at the cantonal level  $c$ . For the degree of direct democracy the six point scale index developed by Stutzer (1999) and applied, e.g., by Frey and Stutzer (2000, 2002), Frey and Feld (2002), Feld and Frey (2002a, 2002b) has been used. The index reflects the extent of direct democratic participation (1= lowest and 6 highest degree of participation) at the cantonal level.<sup>8</sup> As indexes do not tell as much as a single instrument, we are going to measure the degree of

<sup>5</sup> The information about the probability of detection and the fine for tax evasion has been collected by Lars P. Feld and Bruno S. Frey with a questionnaire. The following contributions are based upon this data set: Feld and Frey (2002a), (2002b) and Frey and Feld (2002).

<sup>6</sup> Could you tell me how much confidence you have in the government in your capital: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? (4= a great deal to 1=none at all).

<sup>7</sup> How much confidence do you have in courts and the legal system (5=complete confidence to 1=no confidence at all).

<sup>8</sup> The index includes the four legal instruments: the popular initiative to change the canton's constitution, the popular initiative to change the canton's law, the compulsory and optional referendum to prevent new law or changing of a law and the compulsory and optional referendum to prevent new state expenditure. The index is based on the degree of restrictions in form of the necessary signatures to use an instrument, the time span to collect the signatures and the level of new expenditure which allows to use the financial referendum (for a detailed discussion see Stutzer, 1999).

direct democratic participation with a dummy on legislative referendum and degree of signature requirements for legislative initiatives. Local autonomy is measured with an index developed by Ladner (1994) based on survey results where chief local administrators in 1865 Swiss municipalities were asked to report how they perceive their local autonomy on a 10 point scale. (1= no autonomy, 10 = very high communal autonomy).

### *1. Deterrence*

The economics-of-crime approach would predict that the extent of tax *evasion* depends negatively on the probability of being caught and the size of punishment in case of being caught. Some empirical findings indicate that a higher probability of being caught discourages evasion (see, e.g., Crane and Nourzad, 1987; Witte and Woodbury, 1985; Dubin and Wilde, 1988; Joulfaian and Rider, 1996). In experiments there is also the tendency that a higher audit rate leads to more compliance (see, e.g., Friedland et al., 1978; Beck et al., 1991; Alm, Jackson and McKee, 1992a, 1992b, Alm, Cronshaw, and McKee, 1993; for a survey see Torgler, 2002). However, the pooled cross section time series estimation for Swiss cantons over the years 1970, 1978, 1985, 1990, and 1995 done by Frey and Feld (2002) using tax evasion as dependent variable indicates that the probability of detection has a theoretically unexpected positive sign being not statistically significant, while the size of the fine is statistically significant at the 5 percent level. Beron, Tauchen and Witte (1992) found with tax return data from 1969 a weak deterrent effect from audits on tax compliance. Pommerehne and Weck-Hannemann (1996) found

that the coefficients of the probability of detection and the penalty tax rate have a negative sign, but none of them was statistically significant. Slemrod, Blumenthal and Christian (2001) used a controlled field experiment in Minnesota to analyse taxpayer response to an increased probability of audit. While low and middle income taxpayers increased their reported tax between 1993 and 1994 relative to the control group, the reported income of high income taxpayers fell sharply in relation to the control group.

It is difficult to predict the effects of deterrence factors on tax morale. Deterrence imposed by the tax authority might crowd out taxpayers' intrinsic motivation to pay their taxes and thus crowd out tax morale. On the other hand, deterrence factors might prevent taxpayers with a low tax morale exploiting the more honest taxpayers. Tax morale is therefore not expected to be crowded out if the honest taxpayers perceive the stricter policy to be directed against dishonest taxpayers. Regulations which prevent free riding by others, reducing the possibility to escape from their tax payments may help preserve tax morale (see Frey, 1997).

## *2. Tax Rate and Income*

The effects of the tax rate and the income on tax evasion are difficult to assess theoretically. It depends on the individual's risk preference and the progression of the income tax schedule (see Andreoni, Erard and Feinstein, 1998). A higher marginal tax rate makes tax evasion marginally more profitable, but a contrary effect works depending on the risk aversion of taxpayers. The results are influenced by the tax schedule (proportional, progressive, regressive) (see

Frey and Feld, 2002). Furthermore, the relationship between tax evasion and tax rate depends also on the penalty structure. In case the penalties are proportional to the amount of evaded income and taking into consideration a decreasing absolute risk aversion and constant tax rates than the sign is ambiguous (Allingham and Sandmo, 1972). On the other hand, an increase in the tax rate will encourage individuals to declare more income, if fines are proportional to the amount of evaded taxes (Yitzhaki, 1974).

### *3. Institutional Trust*

In a general way, it can be argued that positive actions by the state are intended to increase taxpayers' positive attitudes and commitment to the tax system and tax-payment and thus compliant behaviour (e.g., Smith, 1992; Smith and Stalans, 1991). If the state acts trustworthily, taxpayers might be more willing to comply with the taxes. On the other hand, perceived unfairness increases the incentive to act against the tax law as psychological costs are reduced. With data from Switzerland (Zurich), Kucher and Götte (1998) found that trust, measured as the ratio of concurrence between the city government's recommendation for an issue put to a vote and the actual outcome at the ballot significantly raised the ratio of submitted tax declarations between 1964 and 1996.

The relationship between taxpayers and state can be seen as a relational or psychological contract, which involves strong emotional ties and loyalties. Such a psychological tax contract can be maintained by positive actions. Thus, one of the most important social psychological reasons for expecting co-operation is reciprocity (see Gouldner, 1960; Axelrod, 1984; Cialdini, 1984;

Regan, 1971). Trust especially plays an important role where detection and punishment are stamped by high cost. Tax authority can not achieve total compliance; they would have to place a tax administrator under every bed. This might indicate that trust is an important institution which influences citizen's incentive to commit them to obedience. And this trust can only be created if government's commitment acts in line with citizens' needs and desires (see Hardin, 1998). Not only trust in the government but also trust in the court and the legal system and thus the way how the relationship between the state and its citizens is established might have an effect on tax morale. The cost of tax raising and government running is lower if taxpayers are more willing to pay their taxes voluntarily (Slemrod, 2003). In this light we predict that institutional trust has a positive effect on tax morale.

#### *4. Age*

Regarding the control variables it might be worthwhile to point out that older people can be expected to have higher tax morale than the younger. Over the years they have acquired greater social stakes, as material goods, statuses, a stronger dependency on the reactions from others (Tittle, 1980), as they mostly have lived for a certain time in the same place and thus are more attached to the community (see Pommerehne and Weck-Hannemann, 1996). Torgler and Valev (2006) provide strong support that the age affects tax morale in a positive manner, controlling also a cohort effect in a panel investigation.

## *5. Demographic Factors*

In the tax compliance literature evidence concerning the variable gender indicates the tendency that men are less compliant than women (see, e.g., Vogel, 1974; Tittle, 1980, Spicer and Becker, 1980). Looking at the marital status it can be argued that married people might be more constrained by their social network and thus more compliant, but on the other hand in Switzerland they are taxed in a higher bracket than two separate incomes which might have a negative impact on tax morale. Better educated taxpayers are supposed to know more about tax law and fiscal connections and thus would be in a better position to assess the degree of compliance, being better aware of the benefits and services the state provides for the citizens from the revenues (see Lewis, 1982). On the other hand, they may be less compliant because they better understand the opportunities for evasion and avoidance and might be more critical about and better aware of how the state uses tax revenues. Self-employed persons do not per se have lower tax morale than other taxpayers, but they have better possibilities to evade taxes. Most empirical results, which indicate that self-employed have lower tax compliance, are from other countries than Switzerland, where labour income earners pay taxes at source.

## *3.2. Results*

We present weighted ordered probit models. Some groups might be over-sampled. A weighted variable helps to correct the samples and thus to reflect national distribution. The weighted ordered probit models help analyse the



ranking information of the scaled dependent variable tax morale. As in the ordered probit estimation, the equation has a non-linear form; only the sign of the coefficient can be directly interpreted and not its size. Calculating the marginal effects is therefore a method to find the quantitative effect a variable has on tax morale. The marginal effect indicates the change in the share of taxpayers (or the probability of) belonging to a specific tax morale level, when the independent variable increases by one unit. In the weighted ordered probit estimation, only the marginal effects for the highest value "tax evasion is never justified" (WVS 1996) and "seriously wrong not to report all the income" (ISSP 1999) are shown<sup>9</sup>.

First, we analyse the effect of direct democracy<sup>10</sup>. The degree of direct democratic participation rights of taxpayers is measured with an index developed by Stutzer (1999). The results for both data sets are presented in Table 1 and 2. The index of direct democratic rights has a highly significant positive effect on tax morale with high marginal effects. Thus, the first hypothesis cannot be rejected. The results indicate that an increase in the index of direct democracy by one point raises the share of persons indicating the highest tax morale value around 7 (3) percentage points. Thus, the results show that the institution direct democracy raises individual's tax morale<sup>11</sup>.

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<sup>9</sup> The obtained results remain also robust when run estimations with standard errors adjusted to clustering on cantons.

<sup>10</sup> It should be noticed that the Swiss World Value Survey was not random-random but quota-random, based on a random sample of communes and then on quotas in terms of sex, age, etc. in the selected communes. Thus, the smallest cantons are not necessarily represented (not represented are: Appenzell a. Rh., Glarus, Jura, Nidwalden, Uri, and Zug). On the other hand, the ISSP data set contains all 26 cantons.

<sup>11</sup> What about the causality between direct democracy and tax morale? Do taxpayers with higher tax morale choose direct democratic institutions? In line with Frey (2001) and Frey and Stutzer (2000) it could be argued that direct democratic institutions have a long tradition in Switzerland and are quite stable over time, which suggests that the causality runs from direct democratic rights to tax morale and not the other way round. However, based on this kind of data set it is not possible to fully rule out the causality problem.

In a next step we analyse whether trust in the government and the legal system have a positive effect on tax morale. The effects of trust on tax morale can be analysed on two different levels: i) at the *constitutional level* and ii) at the *current politico-economic level*. With the WVS question we focus more closely on the current politico-economic level. On the other hand with the ISSP data set we focus on how the relationship between the state and its citizens is established. As democracy works as an institution that enhances the psychological tax contract between citizens and the state and thus induces trust, we first analyse the trust variables in separate estimations. The results indicate that both trust coefficients are highly significant showing a statistically significant positive effect on tax morale. An increase in the trust in government scale (trust in court and the legal system) by one unit increases the share of subjects indicating the highest tax morale by around 8 (3) percentage points. To investigate whether the positive correlation between direct democracy and tax morale is largely driven by a higher trust, we include them together into the same equations. Furthermore, in order to test for alternative explanations we include additional variables (religiosity and individuals' financial satisfaction in the WVS and religiosity in the ISSP data set). Religiosity might influence people's habits and might be a restriction to engage in tax evasion (Torgler 2006). As religious variable we take the variable frequency of church attendance (CHURCH ATTENDANCE). This approximately shows how much time individuals devote to religion. It tells more about behaviour than, e.g., religious attitudes. To the author's knowledge there are only three papers examining the effect of religiosity on tax cheating (Tittle, 1980; Grasmick et al., 1991; Torgler, 2006). All three studies indicate that religiosity affects the

degree of rule breaking, tax compliance and tax morale. Our findings in *Table 1* and *2* are in line with these results, showing a positive correlation between tax morale and the degree of church attendance.

Looking at the variables FINE RATE, AUDIT PROBABILITY and INDIVIDUAL INCOME TAX RATE we observe similar values for both data sets. The results indicate that the basic tax evasion model does not perform in a satisfactory way. Only the World Values Survey shows in one specification a positive correlation between AUDIT PROBABILITY and TAX MORALE. In two specifications we even observe a negative correlation between FINE RATE and TAX MORALE. One reason might be that stronger controls help to catch tax evaders and thus honest taxpayers perceive the audit probability to be directed against dishonest taxpayers. On the other hand, however, a higher fine rate might crowd out more the intrinsic motivation to comply with taxes, as it is settled in the laws and more evident for the taxpayers, signalling thus stronger external interventions. We also observe that tendency that individual tax rate has a negative effect on tax morale. The negative sign is consistent with many empirical papers analysing the correlation between tax rates and tax evasion (see, e.g., Clotfelter, 1983; Crane and Nourzad 1992). However the coefficient is not always statistically significant. It should also be noticed that Feinstein (1991) does not find a positive correlation between tax rates and non-compliance, trying to better separate the effects of marginal tax rates from those of income.

It is difficult to get a clear picture of the effects of the control variables on tax morale. There is the tendency that women have higher tax morale than men. The marginal effects in the WVS survey estimation indicate for example

that being a woman rather than a man increases the probability of a person stating that tax evasion is never justified by around 10 percentage points. Furthermore, married people seem to have higher tax morale than the reference group (singles). In the ISSP data set, which does not differentiate between married people and people living together, the coefficient is positive, but without being significant. A higher education correlates with higher tax morale, at a statistically significant rate in the ISSP data set. We can also observe the tendency of a negative effects income effect. On the other hand we observe differences regarding the employment status in different data sets. Part time employees have higher tax morale than full time employees in the WVS, but a lower one in the ISSP data set. Financial dissatisfaction might negatively influence tax morale. Such dissatisfaction might create a sense of distress, especially when taxes have to be paid and there is a discrepancy between the actual and the aspired financial situation<sup>12</sup>. Thus, taxes might be perceived as a strong restriction, which increases the incentives to reduce tax honesty. As the income variable is integrated into the equation, we can analyse the "stress" component of the financial dissatisfaction. The result in Table 1 shows that an increase in the financial satisfaction level by one unit increases the share of individuals arguing that tax morale is never justifiable by 2 percentage points.

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<sup>12</sup> For the theory of aspiration see e.g., Frank, 1941; Simon, 1955; Siegel, 1957).

Table 1

The effects of direct democracy and trust on tax morale (WVS 1996)

<i>WVS 1996</i>									
<i>weighted ordered probit</i>									
<i>Dependent variable: tax morale</i>									
<i>Variable</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>
<b>a) Deterrence Factors</b>									
FINE RATE	-0.002***	-2.591	-0.001	-0.001	-1.037	-0.098	-0.002**	-2.096	-0.001
AUDIT PROBABILITY	0.001	0.809	0.000	0.002*	1.822	0.000	0.001	1.176	0.001
<b>b) Tax Rate</b>									
INDIVIDUAL INC. TAX RATE	-0.008	-1.544	-0.003	-0.008*	-1.691	0.001	-0.007	-1.404	-0.003
<b>c) Institutional Variable</b>									
DIRECT DEMOCRATIC RIGHTS	0.162***	4.517	0.064				0.184***	5.033	0.073
<b>d) Trust</b>									
TRUST IN GOVERNMENT				0.225***	5.214	0.089	0.170***	3.810	0.067
<b>e) Demographic Factors</b>									
AGE 30-49	0.055	0.562	0.022	0.038	0.372	0.015	0.014	0.137	0.006
AGE 50-64	0.427***	3.440	0.170	0.407***	3.143	0.162	0.310**	2.355	0.123
AGE 65+	0.385*	1.739	0.153	0.277	1.297	0.110	0.215	0.951	0.086
WOMAN	0.286***	3.485	0.114	0.259***	3.117	0.103	0.261***	3.108	0.104
EDUCATION	0.010	0.468	0.004	-0.009	-0.433	-0.004	-0.013	-0.595	-0.005
<b>f) Marital Status</b>									
MARRIED	0.320***	3.012	0.127	0.314***	2.784	0.125	0.346***	3.047	0.137
LIVING TOGETHER	0.051	0.378	0.020	0.098	0.701	0.039	0.089	0.600	0.035
DIVORCED	0.139	0.893	0.055	0.164	1.055	0.065	0.210	1.288	0.083
SEPARATED	0.197	0.697	0.078	0.206	0.725	0.082	0.242	0.834	0.096
WIDOWED	-0.140	-0.755	-0.056	-0.144	-0.807	-0.057	-0.139	-0.759	-0.055
<b>g) Economic Variable</b>									
INCOME	-0.014	-1.006	-0.006	-0.013	-0.861	-0.005	-0.026*	-1.666	-0.010
FINANCIAL SATISFACTION							0.050***	2.894	0.020
<b>h) Employment Status</b>									
PART TIME EMPLOYED	0.276**	2.502	0.110	0.270**	2.377	0.107	0.238	2.090	0.094
SELFEMPLOYED	0.160	1.060	0.064	0.102	0.701	0.041	0.139	0.921	0.055
UNEMPLOYED	-0.061	-0.292	-0.024	-0.024	-0.108	-0.010	0.072	0.331	0.029
AT HOME	0.244*	1.896	0.097	0.208	1.594	0.083	0.214*	1.658	0.085
STUDENT	0.039	0.216	0.015	-0.084	-0.463	-0.033	-0.065	-0.336	-0.026
RETIRED	0.582***	2.729	0.231	0.599***	2.933	0.238	0.503**	2.372	0.200
OTHER	0.496*	1.755	0.197	0.549*	1.762	0.218	0.607	1.910	0.241
<b>i) Religiosity</b>									
CHURCH ATTENDANCE							0.078***	3.623	0.031
Observations	922			891			879		
Prob(LM-statistic)	0.000			0.000			0.000		

Notes: Dependent variable: tax morale on a four point scale. In the reference group are AGE 16-29, MAN, SINGLE, FULL TIME EMPLOYED. Significance levels: \* 0.05 < p < 0.10, \*\* 0.01 < p < 0.05, \*\*\* p < 0.01. Marginal effect = highest tax morale score (4).

Table 2

The effects of direct democracy and trust on tax morale (ISSP 1999)

<i>ISSP 1999</i>										
<i>weighted ordered probit</i>										
<i>Dependent variable: tax morale</i>										
<i>Variable</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg.</i>	
<b>a) Deterrence Factors</b>										
FINE RATE	-0.001	-1.207	0.000	-0.001	-0.677	0.000	-0.001	-0.663	0.000	
AUDIT PROBABILITY	0.38E-03	0.418	0.000	0.001	0.677	0.000	-0.47E-04	-0.051	0.000	
<b>b) Tax Rate</b>										
INDIVIDUAL INC. TAX RATE	-0.010	-0.779	-0.003	-0.021*	-1.681	-0.006	-0.010	-0.770	-0.003	
<b>c) Institutional Variable</b>										
DIRECT DEMOCRATIC RIGHTS	0.100***	3.346	0.029				0.104***	3.410	0.030	
<b>d) Trust</b>										
TRUST IN COURT AND LEGAL SYSTEM				0.116***	3.782	0.034	0.093***	2.936	0.027	
<b>e) Demographic Factors</b>										
AGE 30-49	-0.027	-0.287	-0.008	0.047	0.482	0.014	0.064	0.640	0.018	
AGE 50-64	-0.017	-0.145	-0.005	0.049	0.411	0.014	0.050	0.401	0.014	
AGE 65+	-0.008	-0.043	-0.002	0.053	0.270	0.016	0.005	0.027	0.002	
WOMAN	0.090	1.162	0.026	0.075	0.948	0.022	0.076	0.950	0.022	
EDUCATION	0.044**	2.273	0.013	0.034*	1.676	0.010	0.038*	1.861	0.011	
<b>f) Marital Status</b>										
MARRIED/LIVING TOGETHER	0.011	0.131	0.003	-0.019	-0.237	-0.006	-0.061	-0.723	-0.018	
DIVORCED	-0.314*	-1.941	-0.091	-0.344*	-2.157	-0.100	-0.300*	-1.816	-0.087	
SEPARATED	0.236	1.307	0.069	0.193	1.063	0.057	0.178	0.961	0.051	
WIDOWED	-0.038	-0.221	-0.011	-0.029	-0.161	-0.008	-0.103	-0.565	-0.030	
<b>g) Economic Variables</b>										
INCOME	0.23E-04	0.997	0.000	0.37E-04*	1.708	0.000	0.21E-04	0.957	0.000	
<b>h) Employment Status</b>										
PART TIME EMPLOYED	-0.203*	-1.828	-0.059	-0.214	-1.902	-0.062	-0.172	-1.489	-0.050	
LESS THAN PART TIME	0.049	0.331	0.014	0.020	0.131	0.006	-0.002	-0.014	-0.001	
UNEMPLOYED	0.006	0.020	0.002	0.011	0.037	0.003	-0.039	-0.116	-0.011	
STUDENT	0.283**	2.020	0.082	0.255*	1.741	0.075	0.366**	2.457	0.106	
RETIRED	0.302*	1.751	0.088	0.257	1.453	0.075	0.319*	1.751	0.092	
AT HOME	0.172	1.130	0.050	0.142	0.917	0.042	0.151	0.952	0.044	
SICK	0.290	0.549	0.084	0.215	0.390	0.063	0.250	0.379	0.072	
<b>i) Religiosity</b>										
CHURCH ATTENDANCE							0.085***	4.750	0.025	
Observations	1130			1083			1068			
Prob(LM-statistic)	0.000						0.000			

Notes: Dependent variable: tax morale on a four point scale. In the reference group are AGE 16-29, MAN, SINGLE, FULL TIME EMPLOYED. Significance levels: \* 0.05 < p < 0.10, \*\* 0.01 < p < 0.05, \*\*\* p < 0.01. Marginal effect = highest tax morale score (4).

In the next two tables we will provide the results including local autonomy in the specifications. First we integrate the variable LOCAL AUTONOMY into the equation without the variables TRUST IN GOVERNMENT (COURT AND THE LEGAL SYSTEM) and INDEX OF DIRECT DEMOCRACY. The coefficients show in both data sets a statistically significant positive effect on tax morale. The share of individuals indicating the highest tax morale increases in the WVS data set (ISSP) by 6.2 (5.4) percentage points with an increase in one index point of autonomy. The introduction of the trust variables does not affect the size and the significance of the variable. The last equation jointly includes local autonomy and direct democracy. Both determinants help citizens express their demands and control the government. As we can see, the coefficient for local autonomy loses its significance and its size in the WVS, while the direct democracy index remains robust. On the other hand, the ISSP data indicates that the variable LOCAL AUTONOMY remains highly significant with a slightly lower coefficient and a smaller marginal effect. On the other hand, the index of direct democracy is still significant but at a lower significance level and with lower coefficient and marginal effect values. Frey and Stutzer (2000) argue that direct democracy and local autonomy are interdependent. Direct democracy and federal structures foster each other because individuals are interested in a strong federalism. They are bearing the costs and benefits of governments' activities, which help taxpayers, get a better identification. In general, Feld and Kirchgässner (2001) point out that: "The more important regional and local jurisdictions are in the internal organization of a nation-state, the more important is the question of the proper decision-making procedures at the different government levels. The assignment of

competencies to different government levels is linked to decision-making procedures" (p. 333)<sup>13</sup>.

In sum the results provide strong support that directs democracy and local autonomy have a positive impact on tax morale. Thus, a bottom-up approach enhances tax morale substantially. In a next step we will see whether this relationship remain robust when focusing on the shadow economy with macro (cantonal) data. This is especially important since it allows a further robustness check and provides the chance to control for additional variables within a period of ten years. In addition we have to opportunity to extend the investigation from the attitudinal level to a behavioural one.

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<sup>13</sup> The two variables are significantly correlated at the 0.01 level (WVS,  $r = 0.392$ ; ISSP,  $r = 0.574$ ). Thus, it is difficult to separate the effects of the two variables in one model.



Table 3

## Tax morale and local autonomy (WVS 1996)

WVS 1996

*weighted ordered probit**Dependent variable: tax morale*

Independent variables	<i>Coeff.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>Marg.</i>
<b>a) Deterrence Factors</b>						
FINE RATE	-0.001	0.000	-0.39E-03	0.000	-0.002	-0.001
AUDIT PROBABILITY	0.002**	0.001	0.002**	0.001	0.001**	0.001
<b>b) Tax Rate</b>						
INDIVIDUAL INCOME TAX RATE	-0.009*	-0.003	-0.008	-0.003	-0.007	-0.003
<b>c) Local Autonomy</b>						
INDEX LOCAL AUTONOMY	0.156**	0.062	0.165***	0.066	0.015	0.006
<b>d) Trust</b>						
TRUST IN GOVERNMENT			0.165***	0.066	0.169***	0.067
<b>e) Direct Democracy</b>						
INDEX DIRECT DEMOCRACY					0.180***	0.072
<b>f) Further variables</b>						
	yes		yes		yes	
Number of observations	910		879		879	
Prob(LM-statistic)	0.000		0.000		0.000	

Notes: Dependent variable: tax morale on a four point scale. In the reference group are AGE 16-29, MAN, SINGLE, FULL TIME EMPLOYED. Significance levels: \*  $0.05 < p < 0.10$ , \*\*  $0.01 < p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 4

Tax morale and local autonomy (ISSP 1999)

<i>ISSP 1999</i>						
<i>weighted ordered probit</i>						
<i>Dependent variable: tax morale</i>						
Independent variables	<i>Coeff.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>Marg.</i>	<i>Coeff.</i>	<i>Marg.</i>
<b>a) Deterrence Factors</b>						
FINE RATE	0.85E-04	0.000	0.28E-03	0.000	-0.10E-03	0.000
AUDIT PROBABILITY	0.001	0.000	0.24E-03	0.000	-0.34E-04	0.000
<b>b) Tax Rate</b>						
INDIVIDUAL INCOME TAX RATE	-0.006	-0.002	-0.005	-0.001	-0.002	-0.001
<b>c) Local Autonomy</b>						
INDEX LOCAL AUTONOMY	0.187***	0.054	0.197***	0.057	0.142**	0.041
<b>d) Trust</b>						
TRUST IN COURT AND THE LEGAL SYSTEM			0.094***	0.027	0.093***	0.027
<b>e) Direct Democracy</b>						
INDEX DIRECT DEMOCRACY					0.061*	0.018
<b>f) Further variables</b>						
	yes		yes		yes	
Number of observations	1114		1068		1068	
Prob(LM-statistic)	0.000		0.000		0.000	

Notes: Dependent variable: tax morale on a four point scale. In the reference group are AGE 16-29, MAN, SINGLE, FULL TIME EMPLOYED. Significance levels: \* 0.05 < p < 0.10, \*\* 0.01 < p < 0.05, \*\*\* p < 0.01.

## 4. Empirical results on the shadow economy

The shadow economy includes all market-based legal production of goods and services that are deliberately concealed from public authorities for the following reasons (Schneider 2005b):

- (1) to avoid payment of income, value added or other taxes,
- (2) to avoid payment of social security contributions,
- (3) to avoid having to meet certain legal labor market standards, such as minimum wages, maximum working hours, safety standards, etc., and

- (4) to avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

Hence, in this paper, we will not deal with typical underground economic activities, which are all illegal actions with the characteristics of classical crimes like burglary, robbery, drug dealing, etc. We also do not include the informal household economy which consists of all household services and production. To measure the shadow economy as a percentage of the official GDP we will use the DYMIMIC-method to estimate the parameters for determining the size of the shadow economy and with the help of the Currency Demand Method to calibrate the estimated coefficients of the DYMIMIC procedure into absolute ones. We build a panel with values for the years 1990, 1995, and 2000. The fundament of the methodology has been discussed in previous studies and is therefore not further discussed in this paper (see Schneider and Enste 2002).

#### 4.1 Model

To test whether direct democracy and local autonomy foster a lower level of shadow economy, we propose the following baseline equation:

$$SHADOW_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 DDEMOC_{it} + \beta_3 CENTRALIZ_{it} + REGION_i + \varepsilon_{it}$$

(2)

where  $i$  indexes the canton in the sample,  $SHADOW_{it}$  denotes cantons' size of the shadow economy as a percentage of the official GDP over the periods 1990, 1995 and 2000.  $DDEMOC_{it}$  and  $CENTRALIZ_{it}$  are our proxies for direct democracy and centralization. We use the previous INDEX OF DIRECT

DEMOCRACY and calculate values for these three years. The previously used proxy for local autonomy cannot be used as it has only been collected once. Thus, we take an alternative proxy that measures cantonal degree of centralization, namely the share of cantonal public spending on cantonal and local spending. The regressions also contain several control variables,  $CTRL_{it}$ , including factors that we will discuss in the next sub-section. To control for cantonal invariant factors, we include cantonal fixed effects,  $CD_j$ .  $\varepsilon_{it}$  denotes the error term

#### *4.2. Independent Variables*

In order to fulfill the *ceteris paribus* conditions, we have to control for a number of other important factors, what will be discussed in turn:

##### **1. Fiscal Burden**

The fiscal burden is expected to influence the shadow economy positively. It can be argued that a higher burden increases the attractiveness of behaving illegally. We expect a positive correlation between the fiscal burden and the size of shadow economy. However, using such a proxy has some limitations. It can be argued that it is not so much the statutory tax rates that are relevant in the decision to behave illegally, but rather their application, offering tax exceptions or concessions that affect individual decisions (Friedman et al., 2000). The authors couldn't find evidence that higher direct or indirect tax rates are associated with a larger unofficial economy. On the contrary, they find some evidence that higher direct tax rates are associated with a smaller

shadow economy. Such results are also supported by Dreher and Schneider (2006).

## 2. Demographic and labour characteristics

Demographic and labor characteristics such as population size or the labor force may also affect the shadow economy. The labor force variable measures the potential pool that has the best preconditions to work in the shadow economy. On the other hand, individuals with an occupation have less leisure time at their disposal. Thus, time acts as a restriction to being active in the shadow economy. Unemployed people have an incentive not to report their additional work hours as otherwise they would lose their financial support. If the wage of illicit work and the financial aid together yield more income than regular and overtime work, taking also into account the costs of detection and punishment and assuming risk neutrality, full-time illicit work as an unemployed person yields *ceteris paribus* a higher utility. In such a situation, the danger that a person remains in the shadow economy and turns down job offers increases (Schneider and Enste, 2002). Moreover, a higher level of urbanization may further anonymity and thus reduce loyalty towards the state; this may lead to a higher level of shadow economy. As many sectors are city-based, it is expected that there the incentives to act in the underground economy are higher, especially when government activities and services are below individuals' expectations and preferences.

## 3. GDP

GDP is a proxy for the level of development and prosperity of a region. A higher level of development goes together with a greater capacity to pay and collect taxes, as well as a higher relative demand for income elastic public

goods and services (Chelliah, 1971; Bahl, 1971). In general, we would expect a negative relation between the GDP and the level of the shadow economy.

#### 4. House Proprietors

We also consider the share of REGISTERED CANTONAL HOUSE PROPRIETORS on the cantonal population<sup>14</sup>. The commitment made by house proprietors to their jurisdiction by voluntarily increasing their opportunity costs for the exit option to migrate to another jurisdiction may support the willingness to remain honest. On the other hand, house proprietors have a strong demand for those economic sectors that have the highest rates of illicit work. Schneider and Enste (2002) report that building, renovating, repairing provide the largest share of illicit work (44% of the total illicit work) in Germany. Such results are also applicable to Switzerland. Thus, home proprietors may have a stronger incentive to take advantage of such services which increases the shadow economy.

#### 4.3 Empirical Results

Table 5 presents the results. To check the robustness we present in *Table 5* also pooled estimations. In the pooled estimations, the *beta* or *standardized* regression coefficients compare magnitude, which reveals the relative importance of which variables are used. To obtain robust standard errors in these estimations, we use the Huber/White/Sandwich estimators of standard errors. In line with the tax morale specifications we are going to explore in a

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<sup>14</sup> For summary statistics see *Table A2* in the Appendix.

first step the factors direct democracy and centralization independently. In a next step we include both factors together in the specifications. As Table 5 shows both factors have a strong impact in the size of the shadow economy. Stronger direct democratic participation rights lead to a lower size of the shadow economy. On the other hand, centralization is positively correlated with the size of the shadow economy. The OLS estimations also show that the coefficients INDEX OF DIRECT DEMOCRACY and CENTRALIZATION are highly relevant in explaining the shadow economy compared to other independent variables.

We also present 2SLS specification to deal with possible causality problems. It can be criticized that a substantial increase of the shadow economy can lead to a significant decrease in tax revenues which may affect institutional quality. A panel data set at the cantonal level allows in a better manner deal with endogeneity issues compared to cross-sectional individual survey data. In general, the choice of adequate instruments for institutions is not extensively addressed in the literature. La Porta et al. (1999), Weber (1958), Putnam (1993) and Landes (1998) argue that religion can affect governance and government's performance. La Porta et al. (1997) find that "hierarchical religions" (p. 233) such as Catholicism, Islam, and Greek Orthodox – exhibit inferior government performance to that of largely Protestant countries. Referring to the cultural theories the authors argue that Muslim and Catholic countries provide inferior public goods and that these countries can be viewed as more interventionist and less efficient as a consequence of excessive power and the development of bureaucracies from religious ranks. Thus, following La Porta et al. (1999) we use the share of Protestant population and share of Catholic population on the total cantonal

population as instruments for direct democracy and local autonomy. A certain religion diversity in Switzerland allows such an approach. *Table 5* shows that these instruments are overall effective in explaining our institutional factors. The F-tests for the instrument exclusion set the first-stage regressions are always statistically significant. However, while we observe a positive correlation between SHARE OF PORTESTANTS and democratic participation rights, we also observe a positive correlation between SHARE OF CATHOLICS and direct democracy and a negative between CENTRALIZATION and the SHARE OF CATHOLICS. Thus, results in Switzerland are not fully consistent with arguments of La Porta et al. (1999). In addition, *Table 5* reports a test for instrument relevance using the Anderson canonical correlations LR for whether the equation is identified. The test shows that the null hypothesis can be rejected in all the cases indicating that the model is identified and the instruments are relevant (see Hall, Rudebusch and Wilcox, 1996). The Anderson-Rubin test suggests that the endogenous variables are jointly statistically significant. Such a test is robust to the presence of weak instruments. We also present the Sargan's (1958) test for over-identification to examine the validity of the exclusion restrictions. In all the cases, this test fails to reject the null hypothesis that our instruments are valid, which supports their validity.

Looking at the control variables we find that a higher SHARE OF REGISTERED HOUSE PROPRIETORS is correlated with a higher shadow economy. The coefficient is statistically significant in the regressions. We also observe the tendency that URBANIZATION is correlated with a higher shadow economy, a result that supports our prediction in the theoretical part. On the other hand, a higher share of employment of the cantonal population (LABOR



FORCE) is correlated with a smaller shadow economy. It seems that time acts as a restriction of being active in the shadow economy. This result is also in line with our expectations. Finally, we also observe a negative correlation between the GDP and the size of the shadow economy. However, in most of the cases the coefficient is not statistically significant.

In sum, the empirical results provided in this section also suggest that our key hypotheses cannot be rejected. Direct democracy and federalism play a significant role in the determination of the size of the shadow economy. Thus, institutional quality is a key factor to understand we citizens remain honest.

Table 5: Impact of Direct Democracy and Centralization on the Size of the Shadow Economy

Dependent variable: shadow economy	OLS	OLS	FE	FE	2SLS (FE)	First stage regr.	2SLS (FE)	First stage regr.	OLS	FE
Independent variables										
<b>a) INSTITUTION</b>									-1.159**	-0.013**
DIRECT DEMOCRACY	-1.350*** (-2.48)		-0.015** (-2.51)		-0.069*** (-3.57)				(-2.12)	(-2.19)
CENTRALIZATION		1.078** (2.39)		0.137** (2.35)			0.850*** (2.78)		0.903** (1.99)	0.115 (2.01)
INSTRUMENTS										
Share of Protestants						3.989* (1.88)		0.001 (0.01)		
Share of Catholics						2.761** (2.10)		-0.340** (-2.42)		
Test of excluded instr.						6.84***		3.56**		
<b>b) GOVERNMENT</b>										
TAX BURDEN	-1.071*** (-4.15)	-0.982*** (-4.26)	-0.001** (-4.38)	-0.001*** (-3.89)	-0.001** (-2.35)	-0.007 (-1.30)	-0.0002 (-0.56)	0.000 (0.24)	-0.969*** (-3.83)	-0.001*** (-4.00)
<b>c) CONTROL VARIABLES</b>										
LABOR FORCE	-0.450*** (-3.27)	-0.385** (-2.19)	-0.214*** (-2.93)	-0.184** (-2.54)	-0.339*** (-2.76)	-7.426*** (-3.41)	-0.198 (-1.41)	0.292 (1.26)	-0.445*** (-3.09)	-0.212*** (-2.99)
URBANIZATION	2.884** (2.04)	2.329** (2.00)	0.150* (1.76)	0.121 (1.42)	0.224 (1.63)	2.403 (1.19)	0.075 (0.45)	-0.096 (-0.45)	2.689** (2.23)	0.140* (1.70)
LOG (GDP)	-0.431 (-0.81)	-0.702 (-1.13)	-0.052 (-0.85)	-0.085 (-1.35)	-0.023 (-0.24)	-0.440 (-0.31)	-0.215 (-1.62)	0.294* (1.91)	-0.613 (-1.10)	-0.074 (-1.22)
SHARE OF REGISTERED HOUSE PROPRIETORS	6.205*** (7.05)	6.223*** (7.62)	0.728*** (5.78)	0.730*** (5.74)	0.515** (2.44)	5.957 (1.42)	0.442 (1.63)	-0.006 (-0.01)	5.879*** (6.64)	0.689*** (5.58)
Anderson canon. corr.					13.806***		7.641***			
LR statistic										
Anderson Rubin test					40.17***		40.17***			
Sargan statistic					0.429		1.058			
State (canton) effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob > F	0.000	0.000	0.000	0.000	0.000		0.000		0.000	0.000
Observations	78	78	78	78	78	78	78	78	78	78
R-squared	0.705	0.701	0.571	0.564					0.730	0.606

Notes: *t*-statistics in parentheses. Significance levels: \* 0.05 < *p* < 0.10, \*\* 0.01 < *p* < 0.05, \*\*\* *p* < 0.01. OLS estimations: beta coefficients.

## 5. Conclusions

The basic intention of this paper was to analyse the effects of a bottom-up approach to fight the shadow economy and to increase tax morale. Specifically, we evaluate the impact of direct democracy and federalism on tax morale and the size of the shadow economy. The novelty of the paper is that we provide evidence at the micro level, using two different surveys, and at macro level, using cantonal data, showing that these factors are highly relevant to understand why people cooperate with societies' rules. Institutions that respect the preferences of the citizens will have more support by the people than a state that acts as a Leviathan, and thus a responsive government will enhance tax morale. Both instruments help spend taxes according to the citizens' preferences, which increases the motivation to pay the taxes. A high level of governance and institutional quality allows expressing one's own preferences and involvement and participation in the political process enhances identification with a state's institutions; this counteracts the inclination to be active in the shadow economy and increase the willingness to pay taxes. Participation and identification reduce therefore free-rider problems. If citizens and authorities interact with a sense of collective responsibility thanks to the institutional structures, the system may be better governed and the policies more effective, as accountability promotes effectiveness through its impact on government behaviour.

In sum, the paper provides support that the recent political economy literature on the importance of governance and institutions help to understand

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the level of tax morale and the shadow economy. If citizens perceive that their interests (preferences) are properly represented in political institutions and they receive an adequate supply of public goods, their identification with the state increases, their willingness to contribute increases. Overall, our results support the argument that a sustainable tax system is based on a fair tax system and responsive government, achieved with a strong connection between tax payments and the supply of public goods.

# APPENDIX

**Table A1: Derivation of variables WVS**

Variable	Derivation
Tax Morale (dependent variable)	<p>Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on tax if you have the chance (% "never justified" – code 1 from a ten-point scale where 1=never and 10=always).</p> <p>The ten-point scale has been recoded into a four-point scale, with the value 4 standing for "never justifiable". 4-10 has been integrated in group 1 because of a lack of variance.</p>
Fine Rate	Standard legal fine (in percent) as a multiple of the evaded tax amount based on questionnaire data of Frey and Feld (2002) and Feld and Frey (2002a, 2002b)
Probability of Detection	Number of tax auditors per taxpayer (in ‰) based on questionnaire data of Frey and Feld (2002) and Feld and Frey (2002a, 2002b).
Individual Tax Rate	Own calculations based on the average weighted value (in percentage) using the WVS income groups. From the tax table (Steuerbelastung in der Schweiz 1996, p. 48) the value closest to the average found in the WVS groups is used, groups 6 and 7 being pooled. For the highest value an average income of 300'000 Swiss francs has been assumed (midpoint). For simplicity, no differentiation between singles and married people has been made, working with the individual tax rate table for singles.
Trust in Government	Could you tell me how much confidence you have in the government in your capital: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? (4= a great deal to 1=none at all)
Church Attendance	Apart from weddings, funerals and christenings, about how often do you attend religious services these days? More than once a week, once a week, once a month, only on special holydays, once a year, less often, never practically never. (7= more than once a week to 1=never, practically never)
Income	<p>Here is a scale of incomes (1-10). We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.</p> <ol style="list-style-type: none"> <li>1. Less then 20'000 Swiss Francs</li> <li>2. 20'000-26'999</li> <li>3. 27'000-31'999</li> <li>4. 32'000-37'999</li> <li>5. 38'000-44'999</li> <li>6. 45'000-51'999</li> <li>7. 52'000-59'999</li> <li>8. 60'000-69'999</li> <li>9. 70'000-89'999</li> <li>10. More than 90'000</li> </ol>
Education	<p>What is the highest educational level that you have attained?</p> <ol style="list-style-type: none"> <li>1. Never went to school</li> <li>2. Incomplete primary school</li> <li>3. Primary school (up to 12 years of age)</li> <li>4. Apprenticeship</li> <li>5. Lower secondary school (up to 16 years of age)</li> </ol>

	6. Secondary school without diploma (16-19 years) 7. Technical school 8. Secondary school with diploma 9. University or Federal Polytechnical School without degree 10. University or Federal Polytechnical School with degree
Individual Financial Satisfaction	How satisfied are you with the financial situation of your household? (scale 1 = dissatisfied to 10=satisfied)

Source: Inglehart et al. (2000).

***Table A2: Derivation of variables ISSP***

Variable	Derivation
Tax Morale (dependent variable)	Do you feel it is wrong or not wrong if a taxpayer does not report all of his or her income in order to pay fewer income taxes? (1. not wrong, 2. a bit wrong, 3. wrong, 4. seriously wrong).
Trust in Court and the Legal System	How much confidence do you have in courts and the legal system (5=complete confidence to 1=no confidence at all)
Fine Rate	Standard legal fine (in percent) as a multiple of the evaded tax amount based on questionnaire data of Frey and Feld (2002) and Feld and Frey (2002a, 2002b)
Probability of Detection	Number of tax auditors per taxpayer (in ‰) based on questionnaire data of Frey and Feld (2002) and Feld and Frey (2002a, 2002b)
Individual Tax Rate	Own calculations based on the average weighted value (in percentage) working with the income information done by the ISSP. From the tax table (Steuerbelastung in der Schweiz 1999, p. 48) the value closest to the ISSP income values (midpoint) is used. For simplicity, no differentiation between singles and married people has been made, working with the individual tax rate table for singles.
Church Attendance	How often do you take part in the activities or organisations of a church or a place of worship, other than attending services? Never (1), less than once a year, about once or twice a year, several times a year, about once a month, 2-3 times a month, nearly every week, every week, several times a week (9)
Income	Monthly earnings from employment in Swiss francs (midpoints)
Education	What is the highest educational level that you have attained? 1. Incomplete primary school 2. Primary school (up to 12 years of age) 3. Incomplete secondary 4. Secondary completed 5. Incomplete + complete semi-higher qualification, incomplete university, others 6. University completed

Source: ISSP (1998)

Table A3: Descriptive statistics for macro analysis

Variable name	Description	Source
Shadow economy	Size of the shadow economy as a percentage of the official GDP	Own calculations
Direct democracy	Index of direct democracy	Own calculation based on Stutzer (1999)
Government centralization	Share of cantonal public spending on cantonal and local spending	on Stutzer (1999)
GDP	Real cantonal GDP (logarithmized in the estimations)	BAK Basel Economics
Labour force	Share of employment on the cantonal population	Swiss Federal Statistical Office
Share of registered house proprietors	Share of registered cantonal house proprietors on the cantonal population	Swiss Federal Statistical Office
Share of Protestants	Share of Protestant population on the total cantonal population	Swiss Federal Statistical Office
Share of Catholics	Share of Catholic population on the total cantonal population	Swiss Federal Statistical Office

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